

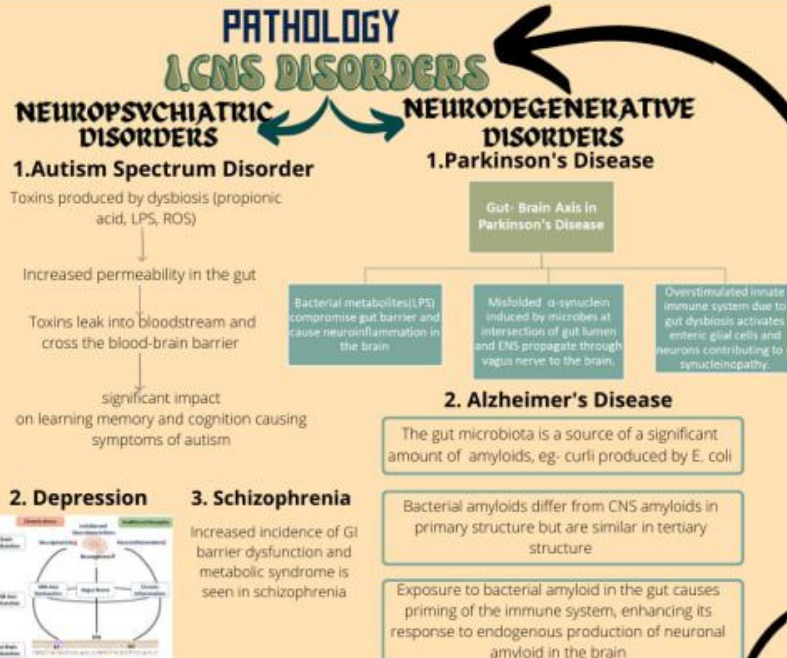
A SNEAKY WAY TO A MAN'S MIND IS THROUGH HIS STOMACH!

THE GUT-BRAIN AXIS

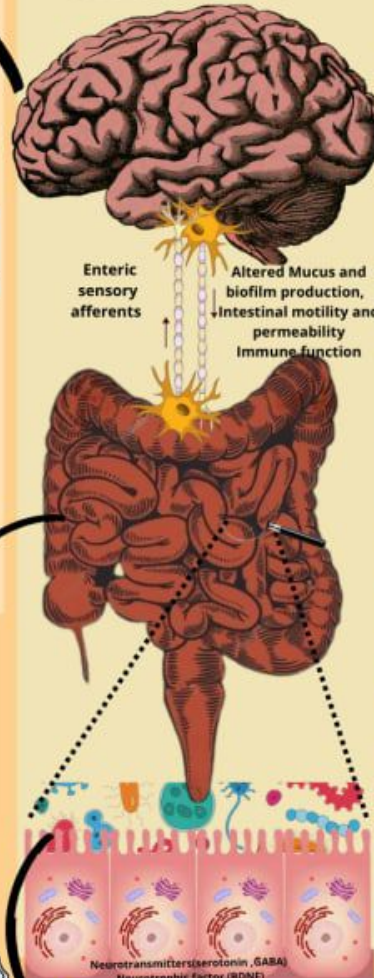


By
Taneem Ilyas &
Suha Tarannum.

Definition: The gut brain axis is a bidirectional biochemical signaling taking place between the GIT/enteric nervous system and the central nervous system



MECHANISM



Listen to your gut!

Have you been experiencing these symptoms for quite a few days now?

- Indigestion
- Stomach upset and diarrhea
- Constipation
- Loss of appetite or unusual hunger
- Nausea

If the answer is yes, you may need to focus on improving your gut brain health! When nervous or anxious, your body releases some hormones and chemicals that enter the digestive system. This can affect the microorganisms that live along your gut, helping in the digestion process while decreasing antibody production. The resulting chemical imbalance can cause several gastrointestinal conditions

Take Care Of Your Intestines



HOW TO IMPROVE YOUR GUT

- ANTIBIOTICS**-Limit antibiotics to as directed by your physician as they can reduce the diversity of your microbiome
- SMOKING**- leads to toxic particles reaching the large bowel induces changes in microbial populations contributing to increased risk of IBS.
- FREQUENT TRAVELLING** to overseas destinations causes circadian disorganization which alters gut microbial populations resulting in long-term GI problems.
- Fermented foods**: Yogurt and cheese contain lactobacilli have been shown to alter brain activity
- Polyphenol-rich foods**: Cocoa, green tea, olive oil and coffee all contain polyphenols that increase healthy gut bacteria and improve cognition
- Tryptophan-rich foods**: Tryptophan is converted into the neurotransmitter serotonin. Foods that are high in tryptophan include turkey, eggs and cheese.
- SANITATION** Poor sanitary conditions in developing countries, and poor personal hygiene, can facilitate the spread of infectious agents.
- EXERCISE**-it can enhance the number of beneficial microbial species, enrich the microflora diversity, and improve the development of commensal bacteria.
- DIET**- shifts in microbial population are driven primarily by the high fat obesogenic diets.
- Omega-3 fats**: These fats are found in oily fish and also in high quantities in the human brain. Omega-3s can increase good bacteria in the gut and reduce risk of brain disorders.
- High-fiber foods**: Whole grains, nuts, seeds, fruits and vegetables all contain prebiotic fibers that are good for your gut bacteria.
- Prebiotics** (fibers that are fermented gut bacteria) Taking certain prebiotics significantly reduces the amount of the stress hormone, cortisol from the body.

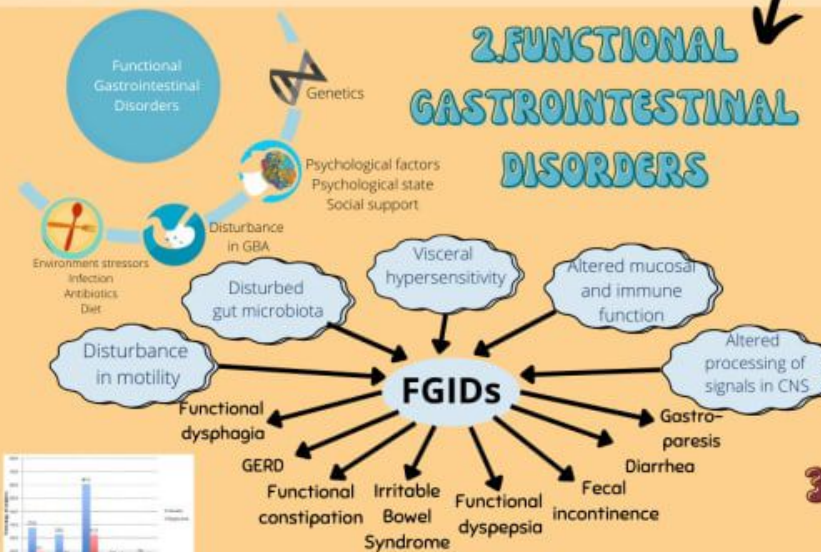
FUTURE PROSPECTS



- ### 1. Postbiotics
- These are non-viable soluble factors secreted by live bacteria or released upon cell lysis.
 - They're also called metabiotics, biogenics, or metabolites or cell-free supernatants. These have biological activity and provide benefits to the host.
- ### 2. Para-probiotics
- Also known as "ghost probiotics," refer to inactivated (non-viable) microbial cells that provide health benefits when given in appropriate doses
- ### 3. Use of Machine learning
- The identification of pathogenic microbiome signatures in individuals combined with demographical data, serological findings and neuroimaging findings can be encoded into the machine learning algorithm which helps identify trends and patterns that can be potentially overlooked by humans.



2. FUNCTIONAL GASTROINTESTINAL DISORDERS



3. AUTO-IMMUNE DISEASES



ROLE OF PROBIOTICS

Probiotics contain microbes that, when ingested, have found application in a number of gastrointestinal and immune system disorders. Further research should address whether specific probiotic treatment should be tailored to a particular host's microbiota and whether the administration of a single strain is more effective than strain combinations.

THERAPY



IBS is associated with higher rates of anxiety and depression and are the most notable comorbidities. Being a stress sensitive disorder, the effects of stress are mainly on intestinal motility and permeability, visceral sensitivity, immune responses and gut microbiota composition. Hence half of the IBS cases present as gastrointestinal symptoms first, followed by mood disorders.